

This listing of claims will replace all prior versions of claims in the application.

Claims 1-16. (cancelled)

Claim 17. (currently amended) A method for treating a microelectronic wafer substrate that comprises one or more contact holes,

a) the photoresist composition comprising i) a photoactive component, and ii) a polymer that comprises 1) groups reactive to crosslinking; and 2) photoacid-labile groups; and iii) 3) a thermal acid generator compound;

b) exposing and developing the photoresist layer on a substrate to yield a developed photoresist image; and

c) thermally treating the developed photoresist layer to induce crosslinking of one or more photoresist components.

Claim 18. (original) The method of claim 17 wherein the substrate is a microelectronic wafer.

Claim 19. (previously presented) The method of claim 17 wherein the photoresist layer is exposed to patterned radiation having a wavelength of about 248 nm.

Claim 20. (previously presented) The method of claim 17 wherein the photoresist layer is exposed to patterned radiation having a wavelength of less than 200 nm.

Claim 21. (previously presented) The method of claim 17 wherein the thermal treatment induces flow of the developed photoresist layer.

Claims 22-23. (cancelled)

Claim 24. (previously presented) The method of claim 17 wherein the photoresist layer is heated after development to at least about 130°C.

Claim 25. (previously presented) The method of claim 17 wherein the photoresist layer is heated after development to at least about 150°C.

Claim 26. (previously presented) The method of claim 17 wherein the photoresist layer is heated after development to at least about 160°C.

Claim 27. (previously presented) The method of claim 17 wherein the photoresist is heated after exposure and prior to development at a temperature of not greater than about 120°C, and the pre-development heating does not cause substantial crosslinking of the photoresist layer.

Claims 28-31. (cancelled)

Claim 32. (previously presented) The method of claim 17 wherein the photoresist groups 1) comprise acetal groups.

Claim 33. (previously presented) The method of claim 32 wherein the acetal groups have an oxygen linkage that is substituted by a secondary or tertiary carbon.

Claim 34. (previously presented) The method of claim 17 wherein the photoresist polymer comprises phenolic units.

Claim 35. (previously presented) The method of claim 17 wherein the photoresist polymer comprises cycloalkyl units.

Claim 36. (previously presented) The method of claim 17 wherein the photoresist polymer comprises alkylacrylate photoacid labile groups.

Claim 37. (currently amended) A method for treating a microelectronic wafer substrate that comprises one or more contact holes,

a) the photoresist composition comprising i) a photoactive component, ii) and a polymer that comprises 1) groups reactive to crosslinking; 2) alkyl-acrylate photoacid-labile groups; and 3) phenolic groups; and iii) 4) a thermal acid generator compound;

b) exposing and developing the photoresist layer on a substrate to yield a developed photoresist image; and

c) thermally treating the developed photoresist layer to induce crosslinking of one or more photoresist component.

Claim 38. (previously presented) The method of claim 37 wherein the photoresist layer is exposed to patterned radiation having a wavelength of about 248 nm.

Claim 39. (previously presented) The method of claim 17 wherein the polymer is substantially free of aromatic groups.

Claim 40. (previously presented) The method of claim 17 wherein the polymer is completely free of aromatic groups.

Claim 41. (previously presented) The method of claim 17 wherein the photoacid-labile groups are primary acetal groups.

Claim 42. (previously presented) The method of claim 41 wherein the groups reactive to crosslinking are tertiary acetal groups.

Claim 43. (previously presented) The method of claim 37 wherein the photoacid-labile groups are primary acetal groups.

Claim 44. (previously presented) The method of claim 37 wherein the groups reactive to crosslinking are tertiary acetal groups.

Claim 45. (currently amended) A method for treating a microelectronic wafer substrate that comprises one or more contact holes,

- a) the photoresist composition comprising a photoactive component and a polymer that comprises 1) groups reactive to crosslinking; and 2) primary acetal photoacid-labile groups, the polymer being substantially free of aromatic groups;
- b) exposing and developing the photoresist layer on a substrate to yield a developed photoresist image; and
- c) thermally treating the developed photoresist layer to induce crosslinking of one or more photoresist components.

Claim 46. (previously presented) The method of claim 45 wherein the polymer is completely free of aromatic groups.

Claim 47. (previously presented) The method of claim 45 wherein the photoacid-labile groups are acetal groups.

Claim 48. (cancelled)

Claim 49. (previously presented) The method 47 wherein the groups reactive to crosslinking are acetal groups.

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Claim 50. (previously presented) The method of claim 49 wherein the groups reactive to crosslinking are tertiary acetal groups.

Claim 51. (previously presented) The method of claim 45 wherein the photoresist further comprises a thermal acid generator compound.

Claim 52. (previously presented) The method of claim 45 wherein the photoresist layer is exposed to patterned radiation having a wavelength of less than 200 nm.

Claim 53. (previously presented) The method of claim 45 wherein the photoresist layer is exposed to patterned radiation having a wavelength of 193 nm.